seepex.com
all things flow

Your advantages: our pumps.

ame
PUMP SPECIALISTS

As individual as your pumping process.

As a leading international supplier of products and services for the pumping and treatment of liquids, we are committed to the principle of made-to-order pumping equipment.

Our company, headquartered in Bottrop, Germany, has a presence in over 50 countries. Today, over 400 of the more than 700 seepex employees worldwide are working in Bottrop on the development, manufacture and sale of progressive cavity pumps, macerators and controlling systems. In addition to sophisticated and modern production facilities, other areas of technical excellence in Bottrop are departments and laboratories for basic research, product development and planning, and information technology.

Every one of our pumps is adapted to the needs of an industrial sector, a specific company, a site of operation and, of course, to the product being pumped. The modular system, which comprises a total of eight product groups and 27 ranges, has the perfect solution for even the most extreme pumping applications.

Each solution is built on a foundation of expert, case-specific consultation, planning and project management. Our product and industry specialists develop tailor-made solutions for the most diverse requirements. The recommended pump design ensures lower energy consumption, reduced maintenance costs, increased operational safety, better utilization of capacity and higher productivity for our customers.

High performance – low costs.

When investing in a pump or a complex pumping system, the purchase costs constitute only a fraction of the total investment. In developing and designing each pumping recommendation, seepex commits to minimizing total operating costs, the so-called Life Cycle Costs (LCC). In the interests of efficiency and productivity, it is vital to keep the costs of installation and commissioning, maintenance and repairs as well as the expense of idle equipment and production downtimes as low as possible. The low energy consumption of our pumps also goes well beyond conventional pump standards.

It is all possible, thanks to the high technical standards of our pumps. Application-specific designs and an extensive service program enhance each phase of the pump life cycle.

The following brief overview of all the seepex innovations will help you keep the life cycle costs of your pumps as low as possible.

Economical – the rotor/stator geometry
Different geometries allow the pumps to be optimally designed for the most diverse applications. The most economical solution for your application is achieved by taking the characteristic features of each individual geometry into consideration.

Space saving – the block design and assembly dimensions
The seepex block design, with its low axial forces and smaller dimensions, allows the pump to be installed in cramped spaces and leaves more free space for service work.

Easy maintenance – the plug-in shaft connection
Thanks to the plug-in connection, regular maintenance tasks such as installing spare parts or making alterations due to production changes are fast and easy.

Protected joints
The universal joints are made up of a small number of easily assembled components. Coupling rods and guide bushings are specially hardened and protected by gas and liquid-tight universal joint sleeves. The optional universal joint protector is made of steel. All of that guarantees durability and saves you worrying about spare parts until much later on.

Durable – longer service life due to optimized rotor finishing
Sophisticated processes are used by seepex for reducing surface roughness and special coating procedures have been developed for the rotor surfaces. Resulting in more efficiency, longer life and a smoother operation characteristics. The tangible benefits include reduced energy costs, longer maintenance intervals and consistent operation characteristics.

Molded-to-size – the stator design
seepex stators are built for every size and pressure stage. With their precise geometry and a multitude of elastomers, they offer special application advantages such as outstanding efficiency, high-pressure stability, reliable sealing and repeatable performance.

Forward-looking – the retensioning device extends service life
A retensioning device for the stator increases its service life. Simply retensioning maintains the sealing line and consequently your pump's optimum pumping capacity.

Smart – the patented Smart Conveying Technology
SCT is a new technology developed by seepex and consists of two main components. The "Smart Stator" adds to the retensioning device the option of simple assembly and replacement of the stator. Because the stator is separated into halfs, all work can be carried out by one person in just a few steps. This makes maintenance child's play. The detachable connection between the "Smart Rotor" and the coupling rod makes changing the rotor quicker and easier.

Fail-safe – the patented dry running protection TSE
This automatic safeguard against dry running reliably prevents breakdown of the progressive cavity pump and works independently of the type of pumped fluid. A temperature sensor monitors the critical state before dry running occurs and switches off the pump or the entire system before anything is damaged.

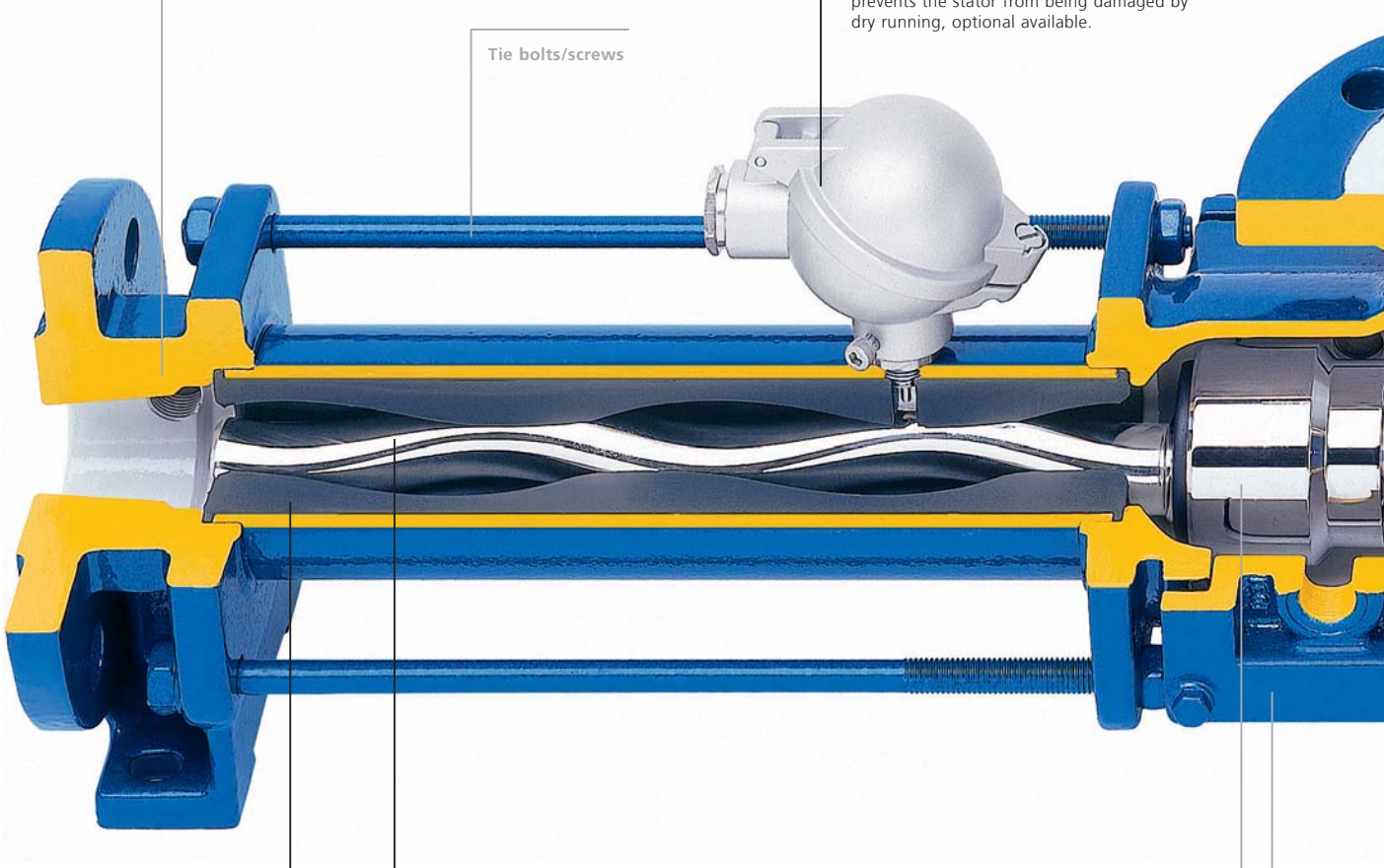
Your conveying solution.

Joint connection
consisting of just 5 components. Power transmission through wear resistant, hardened and replaceable joint parts: easily repaired.

Pressure branch

Dry running protection TSE, thermoelectronic
prevents the stator from being damaged by dry running, optional available.

Tie bolts/screws



Universal joint sleeve protection

Stator
the seal on both ends is moulded as an integral part of the elastomeric stator; corrosion of the stator tube is never a problem because the pumped liquid never comes into contact with the metal tube or the bonding adhesive. Available with optional adjustable stator retensioning device or Smart Conveying Technology with detachable connection between the rotor and the coupling rod.

Inspection ports

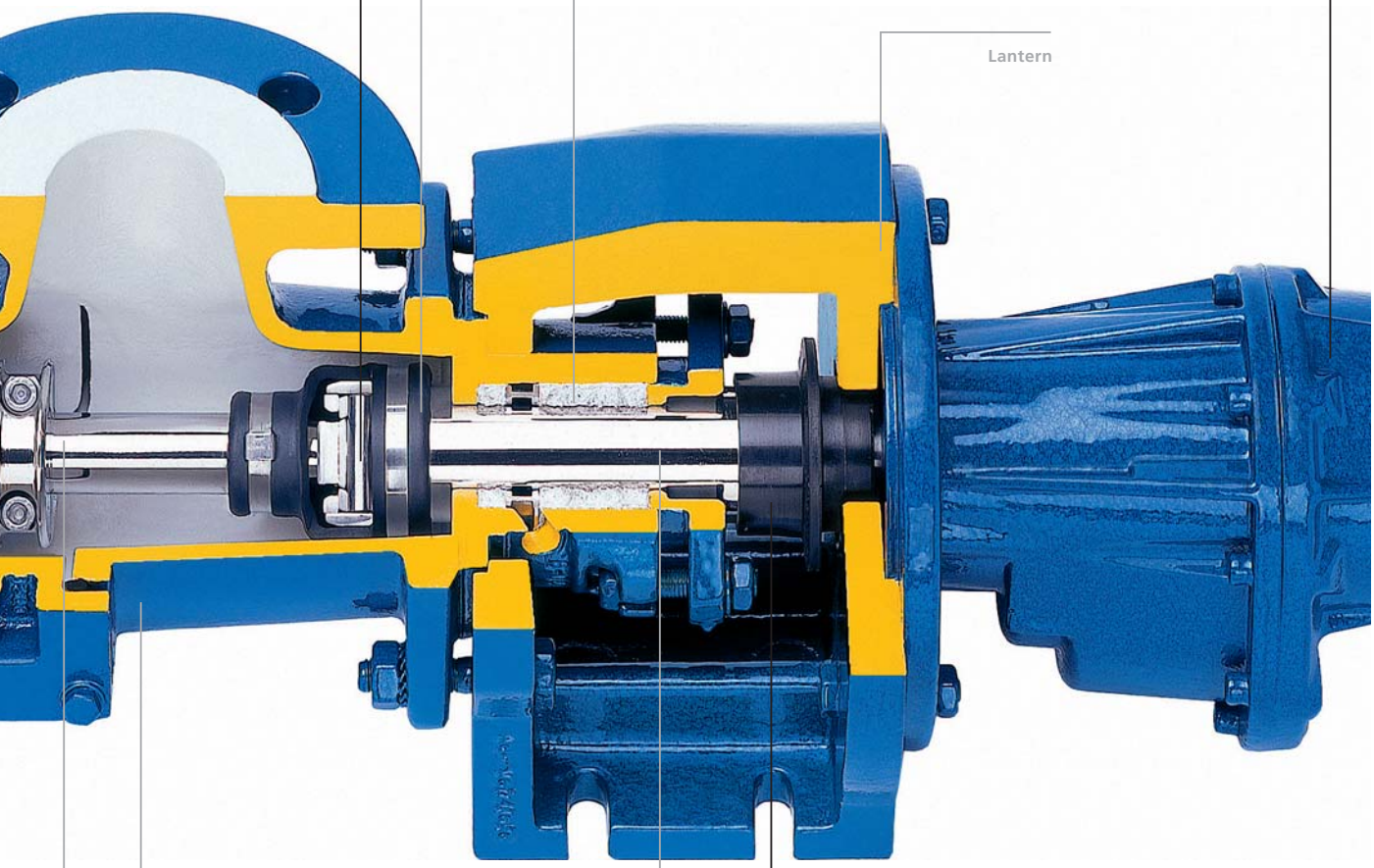
Rotor
wear resistant and corrosion-proof materials, with additional surface treatment.

Universal joint sleeve with holding bands

Shaft seal with gland packing or a variety of mechanical seals

Drive
geared motors, variable speed drives or hydraulic motors of all major manufacturers, directly flanged to the pump without additional couplings or guards.

Lantern



Suction casing

Plug-in shaft

Coupling rod

Plug-in shaft connection
for easy dismantling of the pump and drive enabling quick replacement of the rotating parts and shaft seals. The plug-in shaft pin secures the shaft connection to the drive and the splash ring protects the bearing from contamination/gland leakage.

Universal applications.

Environmental Technology
- Domestic waste water treatment
- Industrial waste water treatment
- Flocculant metering
- Sludge dewatering
- Chemical dosing
- Flue gas desulfuration
- Oil-water-separation

Utilities/Disposal
- Fresh-water conditioning
- Transport of landfill drainagewater
- Chemical dosing
- Galvanic
- Chemical dosing
- Disposal of processwaste

Food/Beverage Industry
- Dairy
- Processed fruit and beverages
- Wine production
- Processed vegetables and meat
- Breweries

Pharmaceutical/Cosmetic Industry
- Dryer feeding
- Metering of additives
- Filling of end products

Petrochemical/ Oil Production/Offshore
- Bilge-pumping
- Oil-water-separation
- Transportation of waste water and excrements
- Drilling mud treatment
- Drainage and fire fighting
- Production of chemicals

Mining
- Auxiliary dewatering stations
- Sump dewatering
- Dedusting
- Flocculant metering
- Pressure filter feeding
- Back filling and grout

Sugar Industry
- Processing of sugar cane and beets
- Diffusion, saturation, thickening
- Crystalization
- Centrate
- Waste water treatment

Paper and Cellulose Industry
- Stock preparation
- Paper/cardboard production
- Coating processing
- Adhesive and pigment processing
- Coater feeding
- Metering of chemicals
- Waste water treatment

Dyeing Industry
- Metering and filling of colors
- Component metering
- Latex foaming
- Waste water treatment

Ships
- Bilgewater handling
- Oil-water separation
- Liquid-mud transport
- Waste disposal

Automotive/Equipment
- Dewaxing
- Mobile dewatering
- Transport of sealing compounds and protective coatings
- Waste oil disposal
- Paint and enamel processing

Building Industry
- Plaster and gypsum
- Concrete coloring
- Tunnel grout
- Waste water/ sludge treatment
- Dewatering

Wood Processing
- Production of partical boards and MDF boards
- Lime metering
- Metering of additives

Chemical/Biochemical Industry
- Polymer production
- Metering of additives
- Processing of reaction agents
- Dispersion handling

Agriculture
- Feeding plants
- Liquid manure transportation
- Bio gas plant
- Irrigation systems

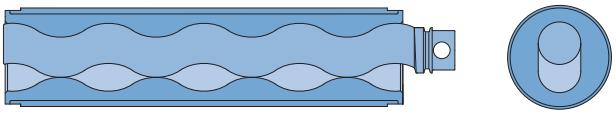
Further application areas are listed at www.seepex.com

An overview of the rotor/stator geometries.

The diversity of customer requirements demand made-to-order solutions. Which is why we will supply the correct rotor/stator geometry – whatever the application. The right geometry is selected on the basis of the conveying capacity, the pressure and the substance being transported. It's the only way to get optimum performance from your pump.

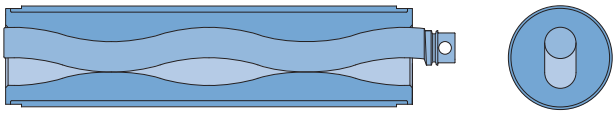
Conventional geometry is a standard design that has proven its worth over decades. It consists of a single-helix rotor with a short pitch and the corresponding double internal helix stator. Apart from the various characteristics that make it suitable for almost every application, this design really performs best when conveying highly viscous liquids or applications with low NPSHA. Pumps with conventional geometry can be delivered rated for pressures of up to 48 bar (720 PSI) as standard.

Conventional geometry, multi-stage



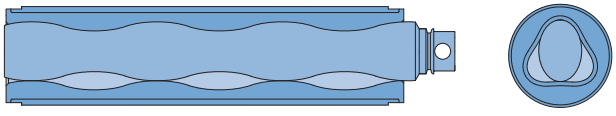
In comparison with the conventional geometry, 6L geometry has a smaller rotor diameter and a longer pitch. The resulting advantages in terms of efficiency and wear are especially useful for conveying more fluid substances. As indicated by the name, 6L geometries can be deployed with a counter pressure of up to 6 bar (90 PSI).

6L geometry, single stage



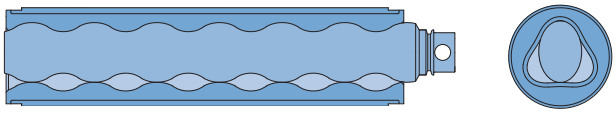
The Tricam geometry, with its single stage (6LT) design, is a logical further development from the 6L geometry. The use of a double external helix rotor in an internal three-helix stator increases the conveying capacity by 50 % in a pump with the same outer diameter and length.

Tricam geometry (-6LT), single stage



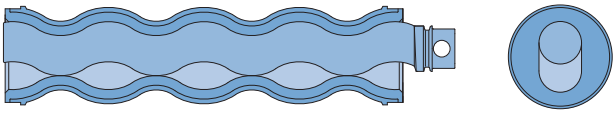
Even at higher pressure requirements (up to 36 bar or 540 PSI), the Tricam design increases conveying capacity by 50 % compared to the conventional or 6L geometries.

Tricam geometry (T), multi-stage



Stators with uniform elastomer wall thickness are characterized in particular by a higher stage pressure. Instead of 6 bar (90 PSI) per stage, up to 12 bar (180 PSI) is allowed with this design. These stators can also be usefully deployed for high-temperature media.

Conventional geometry, stator with uniform wall thickness



The geometries in detail: 6L, conventional, Tricam.

The essential difference between the individual geometries can best be represented by the following formulas.

The theoretical conveying capacity of the 6L and the conventional geometry is calculated as follows:

$$Q_{th} = 4e \cdot d \cdot 2s \cdot n \cdot 60$$

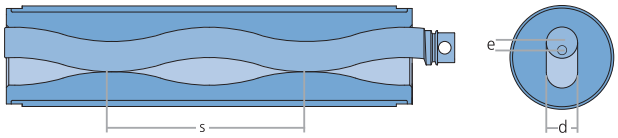
$$Q_{th} = A \cdot S_S \cdot n \cdot 2 \cdot 60 \cdot 10^{-9}$$

The following formula is used for the Tricam geometry:

$$A = \frac{(d_R + 4e)^2 \cdot \pi - D_R \cdot d_R \cdot \pi}{4}$$

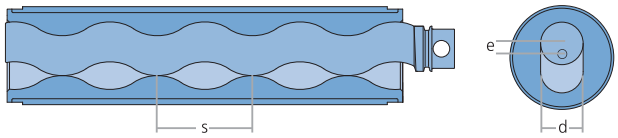
For the single helix rotor geometries, Q_{th} (m^3/h), along with the rotation speed n [min^{-1}], is thus a function of e [m] rotor eccentricity, d [m] rotor diameter, and s [m] rotor pitch.

6L geometry, single stage



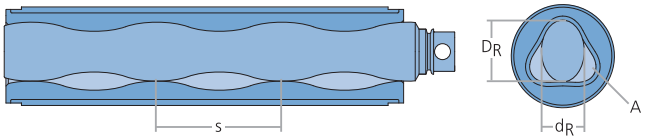
Q_{th} is the same for the double helix rotor geometries shown, as the smaller rotor eccentricity and smaller rotor diameter are equalized by the greater pitch. In other words, the same speed results in the same theoretical conveying capacity.

Conventional geometry, multi-stage



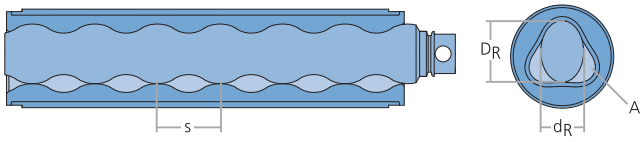
The theoretical conveying capacity of the 2/3 speed geometries (Tricam) is a function depending on the conveying surface (A) multiplied by the stator pitch (S_S) and the eccentric speed. The flow rate of the Tricam geometry is twice as great as the standard geometries at the same speed. On each rotor revolution all conveying chambers are evacuated twice. Despite the smaller conveying chambers, this leads to a 50 % increase of the conveying capacity.

Tricam geometry (-6LT), single stage



The Tricam geometry has on average a roughly 14 % higher surface velocity. Thanks to the above-mentioned capacity increase, it is possible, with a slight speed reduction, to have a lower surface velocity and still maintain a higher conveying capacity compared to the single helix geometries.

Tricam geometry (T), multi-stage



Wear and tear on the main pump elements, rotor and stator, is essentially determined by the surface velocity of the rotor, the effective forces and the properties of the conveying product and the resistance to erosion of the materials used for the rotor and stator. Due to the motion sequence there are three values for the surface velocity.

$$V_{min}\ [m/sec] = \frac{\pi \cdot n\ [min^{-1}] \cdot (d - 4e[mm])}{1000 \cdot 60}$$

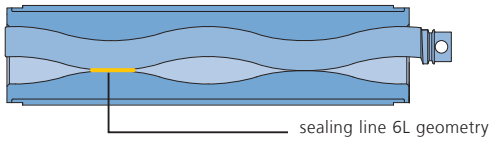
$$V_{max}\ [m/sec] = \frac{\pi \cdot n\ [min^{-1}] \cdot (d + 4e[mm])}{1000 \cdot 60}$$

$$V_{g_{median}}\ [m/sec] = \frac{\pi \cdot n\ [min^{-1}] \cdot (d_R + 2e)}{1000 \cdot 60}$$

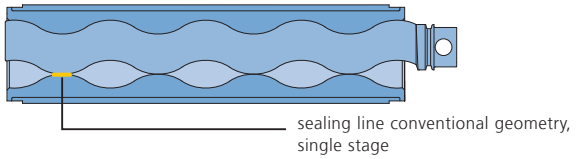
Constant conveying capacities

Due to a smaller rotor diameter, the seepex 6L geometry results in surface velocities, which are lower than the single helix conventional geometry by about 20 %, when operating at the same pump speed. This results in a significant extension to the service life of the rotor and stator. Due to the longer sealing line, the pressure and the conveying capacity can be kept constant over longer periods of time, even when wear and tear has reached an advanced stage.

6L geometry, single stage



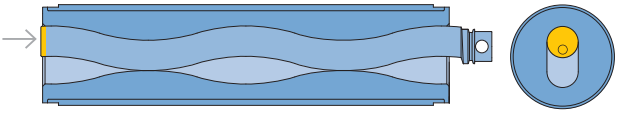
Conventional geometry, multi-stage



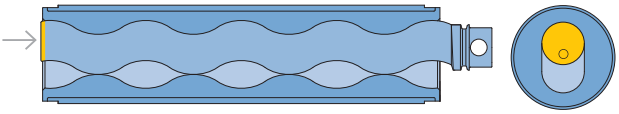
Lower axial forces

With a reduced rotor diameter and smaller eccentricity, the 6L geometry has a smaller cross-sectional surface compared to the conventional geometry. As a consequence, the axial forces working on the joints and bearing are around 50 % less. The axial loads on the Tricam geometries are between those of the 6L and the standard geometries.

6L geometry, single stage



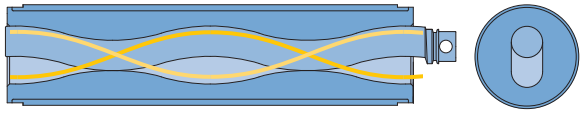
Conventional geometry, multi-stage



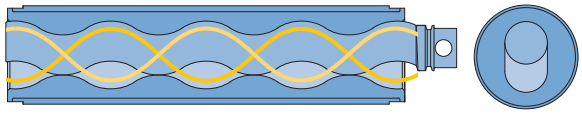
Low pulsation flow characteristic

Compared to the conventional geometry, the elongated form of the 6L rotor and stator and the resulting smaller radius of rotation have positive effect on turbulence, pulsation, shear and vibration. Because the Tricam geometry has a higher number of created cavities than the 6L geometry, the flow overlap increases from two to three displaced cavities per revolution. This reduces the pulsation with the Tricam geometry even more.

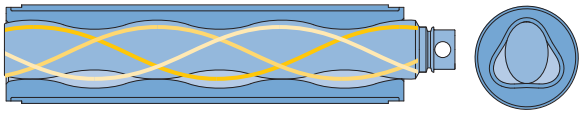
6L geometry, single stage



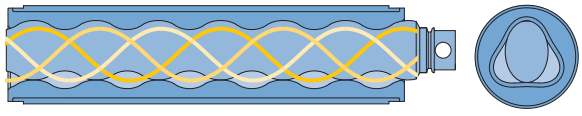
Conventional geometry, multi-stage



Tricam geometry (-6LT), single stage



Tricam geometry (T), multi-stage



Key advantages

- The right geometry for every application
- Optimum performance, resulting in lower operating costs and a fast return on investment costs
- Long service life of pump, cost savings on spare parts
- Thanks to the modular system all geometries are interchangeable

An overview of the pump designs.

Ever higher demands on conveyance, spending cuts and a lack of space in the industrial sector have meant that progressive cavity pump designs have been continually enhanced. The connection from the drive to the pump is one element that has been further developed.

Block design
The block design is the most common construction of our progressive cavity pumps. It helps to save space, is easy to assemble, has a reasonable price and is easily maintained, because the wearing parts can be replaced faster.

BN range pumps with geared motor and base plate flanged directly to the pump. Space-saving design, easily maintained due to plug-in shaft connection, cost-efficient.

Conventional design
Technically complex and expensive designs are increasingly giving way to simple, cost-effective designs.

NS range pumps with free bare shaft, geared motor, flexible coupling, coupling guard and base plate. Long design, easily maintained due to plug-in connection, universal drive configuration, cost intensive.

NS range pumps with free bare shaft. Electric motor, V-belt, guard and motor adjustment. Complex design, drive arrangement difficult to maintain, cost intensive.

Key advantages
- Fits easily in your system due to the compact block design
- Faster exchange of wearing parts due to the plug-in shaft connection
- Cost effective due to simpler design using standardized components

Block design

Conventional design 1

Conventional design 2

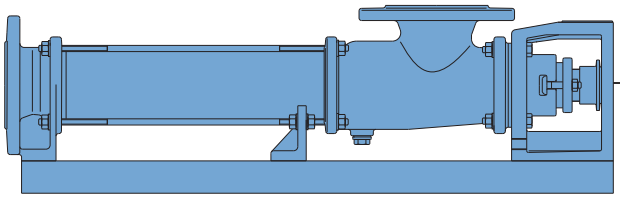
The block design.

In our block design pumps, the drive is flanged directly to the pump. This design is selected for the correct axial load, shaft dimensions and flange dimensions, so that seepex pumps of all sizes and pressure stages can be delivered in block design. There is no need for a separate pump bearing housing.

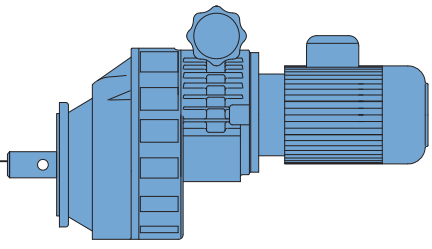
This compact, cost-effective and easy maintenance design is state-of-the-art.

Key advantages

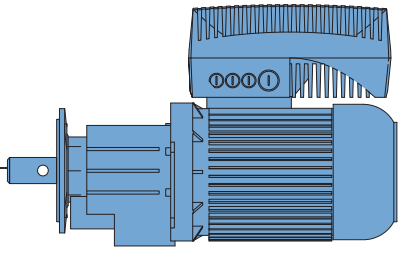
- Installation with minimum space requirements
  - > Short, compact design
  - > More space for dismantling and assembly
- Easy maintenance
  - > Simple separation of pump from drive due to plug-in connection
  - > Faster replacement of rotating wearing parts
  - > Thanks to separate shaft seal housing, the installation of all shaft seals is possible
- Fewer but standardized components
  - > Drive casing, V-belt, motor chair and flexible coupling are not required
  - > Low total weight
- Economical
  - > The base plate is independent of the drive unit
  - > Significantly better value for money
- Standard drive unit
  - > Attachment of drive units from well-known, global manufacturers



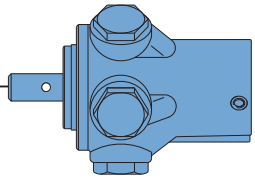
BN range pump with base plate



Variable geared motor



Geared motor with frequency inverter



Hydraulic motor

The plug-in shaft connection.

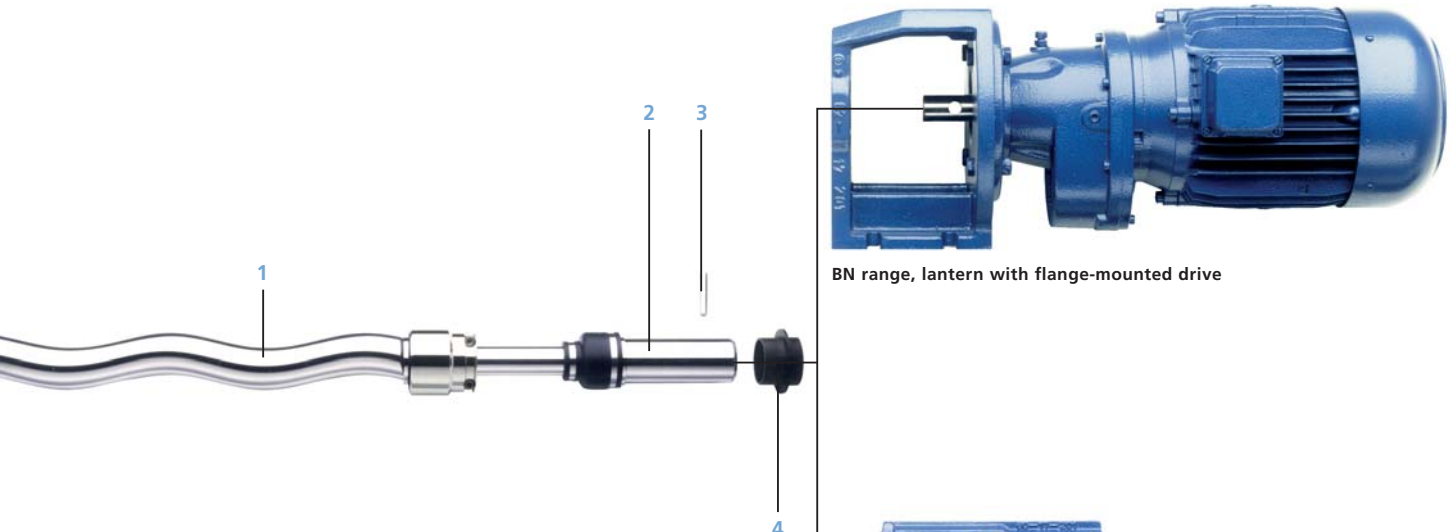
The plug-in connection between the shaft seal and the drive unit or drive casing makes maintenance work much easier.

For example when
- replacing rotor and joint parts
- replacing the plug-in shaft in the sealing area
- changing from gland packing to mechanical seal
- replacement of mechanical seals or mechanical seal parts

Faster conversion and replacement
All rotating parts that come into contact with the product can be dismantled as a single unit. It is simply a matter of pushing the splash ring forward on the plug-in shaft, which is designed as a shaft protection sleeve, and pressing out the plug-in shaft pin.

The time-consuming dismantling of the complete drive casing is thereby avoided. The assembly of a new rotating unit is also fast and easy, thanks to the plug-in connection.

Key advantages
- Shorter maintenance work due to fast exchange of rotating parts
- Higher productivity due to fewer downtimes



1 Rotor
2 Plug-in shaft
3 Plug-in shaft pin
4 Splash ring

BN range, lantern with flange-mounted drive

NS range, drive casing

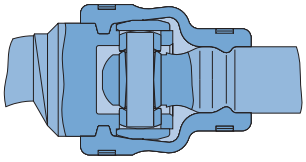
An overview of the joint designs.

As our pumps are used in virtually all areas of industries, they have to be equipped to meet requirements in different situations. There are actually a total of four joint designs to choose from – two each for standard and sanitary applications.

Because our joints are made from just a few components, assembly and dismantling are very straightforward. When maintenance is required, the joints or individual components can be replaced in the shortest possible time, which is good news for your production department.

Pin joint

The standard joint, which is completely filled with a special grease, is hermetically sealed with a flexible universal joint sleeve and two holding bands. Hardened and ground bushings and pins provide for long service life and trouble-free operation.

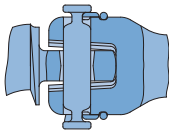


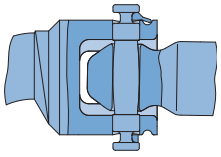
Hygienic joint

Apart from the special shape of the coupling rod and the rotor or plug-in shaft, the sanitary open fork joint consists of only two components, the pin and the circlip.

For higher pressures and capacities, we also offer a newly developed, heavy-duty, open pin joint. Maintenance tasks can be carried out quickly and easily without special tools.

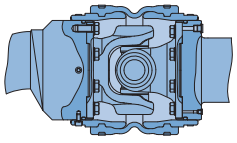
These joint designs comply with the specifications of the 3-A Sanitary Standards from the USA and the EHEDG guidelines.





Cardan joint

We employ cardan joints for large pumps with the heaviest loads. These designs are filled with oil and also sealed with a flexible universal joint sleeve and holding bands. Both the cardan joint and the pin joint can be equipped with an universal joint protector that reliably protects against mechanical damage.



Key advantages

- The right joint for every application
- Long service life of the pump and maximum resistance against corrosion and wear thanks to hardened and ground components
- Few components, easy to assemble
- Optimum protection due to complete sealing (pin joint and cardan joint)
- Maintenance work without special tools (hygienic joint)
- Optimum cleanliness (hygienic joint), because virtually residue-free cleaning is possible

The pin joint in detail.

Optimum NPSH value
Our pumps are equipped with two joints, to enable the eccentric motion of the rotor and to transfer the rotation by means of the coupling rod from the plug-in shaft to the rotor. The joint design is optimized with respect to fluid mechanics, such that a lower NPSHR value is attained by avoiding turbulence or restrictions in the suction casing.

Wear resistant components
This joint is made from only a few wear resistant, hardened and exchangeable joint components. It is fastened by means of a retaining sleeve on the rotor head, the plug-in shaft head, or the drive shaft head. Tight manufacturing tolerances ensure that the pump runs quietly and smoothly and are crucial for longer service life.

Replacing individual components
Our standard joint is characterized by the fact that the connecting element, the coupling rod pin, is guided in a hardened, replaceable bushing. In case of need, the coupling rod or the guide bushing can be replaced separately. In this case, the main components – the rotor, the coupling rod and the plug-in shaft – need not be replaced.

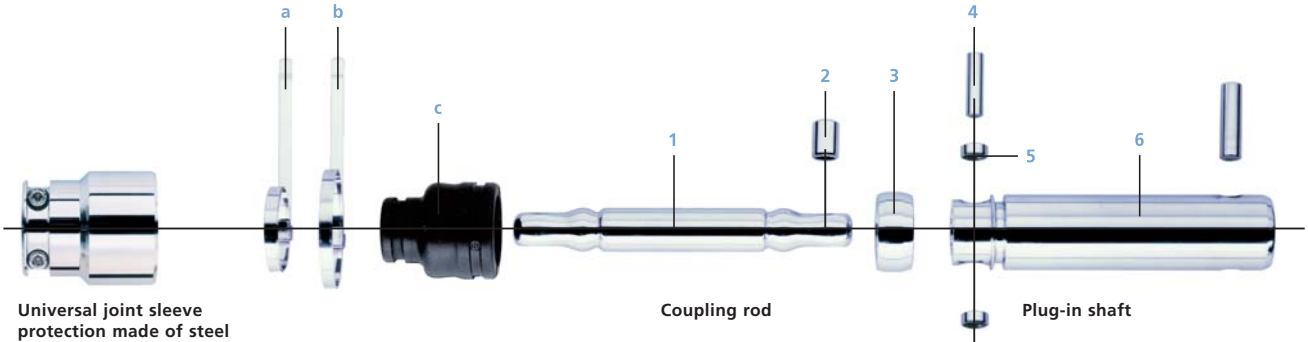
Flexible full sealing
The entire joint, which is filled with special grease, is sealed with a flexible universal joint sleeve. The joint sleeve is fastened to the rotor head, the plug-in shaft head, or the drive shaft head and to the coupling rod by means of holding bands.

Fluid-tight design for long-term operation
The joint is thus optimally protected against penetration by the usually abrasive product being pumped. This gas-tight and fluid-tight design has proven its worth above all for continuous operation.

Joint seal withstands high pressure
In the case of high inlet pressure in the suction casing or in the case of clockwise pumps with a high pressure range (greater than 3 bar (45 PSI) to max. 12 bar (180 PSI)), the joint sleeves are stabilized by an interior sleeve. In the pressure range from 12 to 24 bar (180 to 360 PSI), complete filling of the joint with special grease is ensured by means of additional grease filling holes in the coupling rod. This prevents any deformation of the universal joint sleeve by the high pressure.

Material protection
To protect the joint sleeve from mechanical damage caused by oversize solids such as plastic, wood or metal, we offer a universal joint sleeve made of steel.

Key advantages
- Few components and easy to assemble
- Wear resistant with thus long service life, due to hardened components
- Optimum protection of the joints by complete sealing



- a Small holding band
- b Large holding band
- c Universal joint sleeve

- 1 Coupling rod
- 2 Coupling rod bushing
- 3 Retaining sleeve
- 4 Coupling rod pin
- 5 Guide bushing
- 6 Plug-in shaft


Pin joint with joint seal, fully assembled

The rotor and its principle of operation.

Rotors from seepex, as the rotating core of our pumps, are as individual as your pumping process. Along with the various basic geometries, it is the material qualities, the different coatings and the surface grades that make seepex rotors what they are: individually adapted, high-quality components for your specific application. Moreover, all of our geometries are interchangeable, often without changing the dimensions of the pump. As a result, our pumps have the flexibility to adapt for changes in your pumping process.

The optimum rotor surface

The high demands for performance, efficiency and resistance to erosion that we place on our rotors can only be met by surfaces of the highest quality. State-of-the-art machining, cutting and coating processes create the optimum surfaces (up to RA 0.3) for your conveying liquid. It is possible, for instance, to reduce surface roughness by means of various grinding and polishing techniques that allow for the shape of the rotor. The wear and corrosion behavior as well as the friction and strength properties of our rotors can be specifically improved by such treatments.

Optimum service life

Coating the rotor surfaces makes a significant difference to the service life of the rotor, especially when it is used to convey abrasive products.

The chrome-based plating we supply, which is based on the ductile coating procedure, has definite advantages over conventional hard chrome.

The electrolytic process achieves pore-free and fissure-free hard coatings with outstanding hardness of up to 1250 HV. Diffusion into the basic material creates an excellent bond between the basic material and the coating, and prevents peeling even under extreme operating conditions. This ensures long service life for the coating and the rotor.

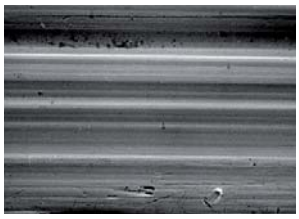
Key advantages

- Optimum efficiency due to optimum surface treatment
- Saves energy by reducing the starting and operating torque
- Quiet operation characteristics due to reduced surface roughness
- Long service life due to harmonized components, cost savings on spare parts

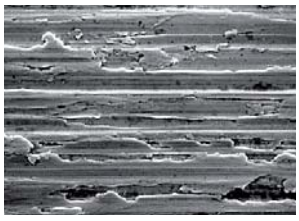
seepex design

Ground and polished rotor surface

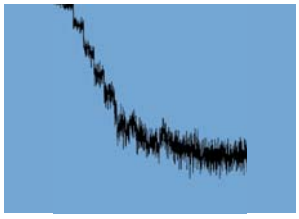
Industry standard



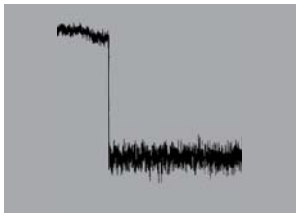
Rotor surface, peeled



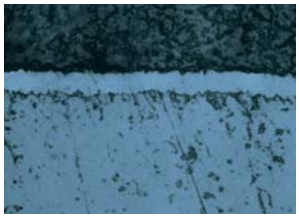
Rotor surface, ground



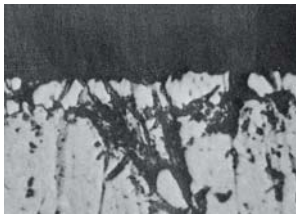
This diagram shows the advantageous deep diffusion zone of the ductile coating in the basic material, which ensures outstanding service life.



The boundary line between base material (below) and standard chrome coating (above) can be clearly distinguished. When the component is under mechanical stress stripping of the coating can occur.



Bending test of a ductile hard chrome coating. Adhesion to the basic material is excellent, there are no cracks.



Bending test of a standard hard chrome coating. Poor adhesion, large parts of the coating have come loose.

Flat test of a ductile hard coating, polished and completely fissure free. The hardness of the ductile coating is 1620 HV, that of the basic material is 180 HV.

The standard stator design.

Our stators are manufactured individually for every size and pressure stage. This production specification enables the manufacturing of stators with integral seal gaskets at both ends.

As stators are subject to natural wear, an optional retensioning device is available which considerably increases the stator's service life (see page 17 of this brochure).

This specification enables the manufacturing of stators with integral gaskets at both ends. These are especially useful for conveying toxic and aggressive products. Corrosion is avoided because the stator jacket is not in contact with the product. Moreover, this design meets the hygienic requirements of the food industry.

To ensure we can offer the ideal pump for every application, we have stators with numerous elastomer properties. Due to different shrink factors, some are manufactured with specially adapted cores.

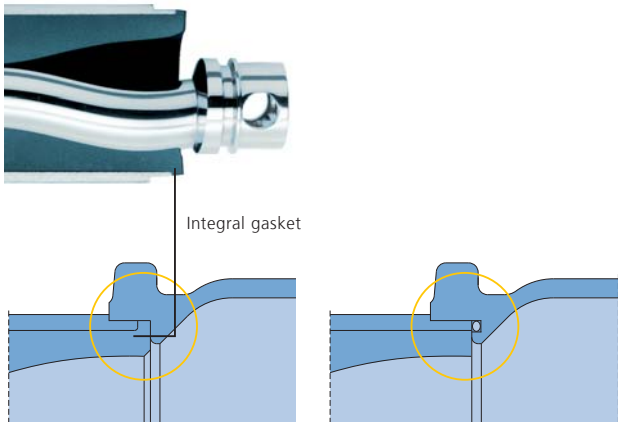
Only the perfect interface between the rotor and the stator can guarantee high efficiency and long life. An even compression between the two main pump elements is crucial. Unlike stators made from cylindrical cores, which have a strong pull-in area at only the middle, seepex stators are made from appropriately adjusted cores. This manufacturing process results in an even compression throughout the entire length of the stator.

Key advantages

- High level of volumetric and mechanical efficiency
- Energy and cost savings due to
  - > low driving power
  - > lower starting and operating torque
- Good pressure stability (even in lower speed range) ensures optimum pumping characteristics across the entire speed range
- Reliable sealing prevents corrosion and premature wearing
- Easy maintenance due to simple assembly

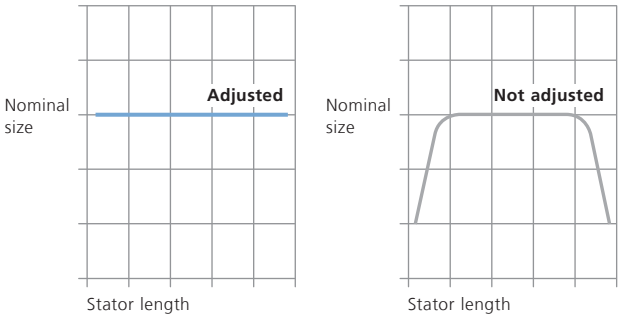
The "Smart Conveying Technology", SCT for short, goes a step further: By separating the stator into two parts and the detachable connection between the rotor and the coupling rod, maintenance work is reduced to a minimum. That saves time and costs and increases the productivity of your pumping process. Moreover, this stator design can also be retensioned, to increase the stator's service life and restore the compression fit between the rotor and the stator, thus maintaining optimum pumping performance without requiring extra stages (see page 18 of this brochure).

Reliable sealing



seepex sealing **Industry standard**

Precise geometries



The stator – readjustable.

The function of our retensioning device is to extend the natural wearing of the stator. It allows you to significantly increase the life of the stator.

The principle is simple: The stator used with the retensioning device is fitted with axial slots, which guarantee even radial compression. The retensioning device itself consists of a pipe clamp, which is made from thin-walled metal and lined with rubber. It retensions the stator evenly, by means of either four or eight tie bolts (depending on pump size). The optimum clamping between rotor and stator – and the original pump performance – is restored.

The service life of the rotor and stator can be doubled or tripled. The original investment is paid-off even quicker when highly abrasive products have to be pumped.

Key advantages

- More durable, longer service life
- Reduction of spare part costs
- Lower operating costs
- Fast return on original purchase costs

Stator retensioning device with eight tie bolts for even retensioning of the stator

Stator with several axial slots to ensure uniform, radial compression when retensioning

The special stator and rotor design – Smart Conveying Technology.

Eventually every rotor and stator wears out and must be replaced. This procedure can often be arduous and problematic. The pipework has to be separated, the pump removed and almost completely dismantled – a time-consuming and expensive operation.

Longer service life

"Smart Conveying Technology" (SCT) is the result of the continuous development of the established seepex stator technologies. It offers a longer service life for the rotor and stator, due to the integrated retensioning device, simple exchange of pumping elements without dismantling the pump, and time and costs savings of up to 30 %.

As with the tried and trusted stator retensioning device, the stator of the "Smart Conveying Technology" can also be re-tensioned several times before the stator has to be replaced, resulting in a significantly longer service life. The detachable connection between the rotor and the coupling rod makes changing the rotor quicker and easier. The pump also remains in place, and there is no need to remove the suction casing, pipelines or joint.

Shorter maintenance time

Dividing the stator into two parts and the detachable connection between the rotor and the coupling rod makes maintenance work quick and easy, keeping time and personnel requirements to a minimum. Whether it is a matter of exchanging a worn out stator or rotor, or removing blockages and foreign bodies, the speed at which maintenance work can be done is astounding, saving up to 80 % of the assembly time (depending on the pump size).

Less space required

When it comes to space requirements, "Smart Conveying Technology" makes a real contribution, because the pumping elements can be assembled and dismantled without the need to remove the entire pump or any of the pipe. Therefore, no extra space for pipe spools or floor-space to remove or extend stators is needed.

"Smart Conveying Technology" is available for new pumps and is also simple to fit to existing installed pumps as a retrofit kit. It can convey a multitude of products in almost any industrial sector.

Smart Conveying Technology, view with closed "Smart Stator"

Smart Conveying Technology, view with open "Smart Stator"

Smart Conveying Technology, view of the detachable connection of the "Smart Rotor"

Key advantages

- Increased rotor and stator life by means of integral retensioning device
- Extremely easy maintenance due to fast assembly/dismantling of components
- Increased productivity due to short maintenance down-times for the pump
- Reduced space requirements for all maintenance tasks, as no dimension for stator replacement is necessary
- Easy handling during maintenance due to low-weight components
- Low transport costs for spare part deliveries due to low-weight components
- Environmentally friendly due to separate disposal of elastomer and steel components

The dry running protection TSE.

With its unique functional principle, this optional device, which has been developed and patented by seepex for all our progressive cavity pumps, offers completely reliable protection against dry running – the most common cause of downtime with a progressive cavity pump.

Reliable function
The temperature between the rotor and the stator is thermo-electrically recorded constantly by a temperature sensor, which is built into the stator, and compared to the limit set on the dry-running protection (TSE) control device.

If the pump runs dry, the temperature rises due to the increased friction between the rotor and the stator. When the temperature set point is reached, the control device switches off the pump drive and triggers an alert.

Universally applicable
Regardless of the pipeline routing and the way the pump is setup, this reliable function is available not only for water, but also for abrasive, highly-viscous, and sticky media, including media with a tendency for coating or settling.

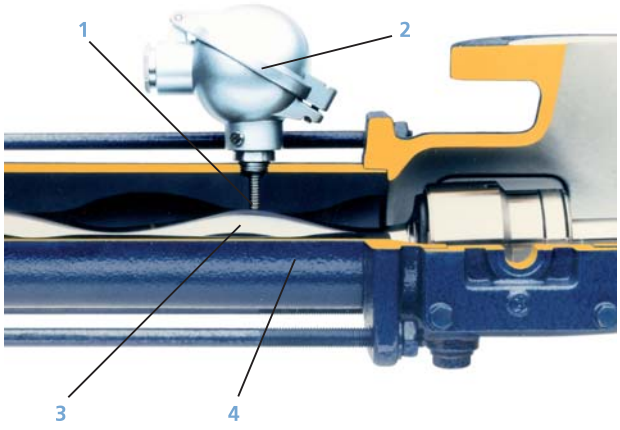
The TSE control device, with its potential-free relay contacts, is integrated in the protective circuit of the drive and connected to the temperature sensor built into the pump. The pump's switch off temperature can be adjusted using the keyboard at the front. An alert triggered by excessive temperature is indicated by a red LED.

The basic version of the dry running protection (TSE-LC) switches off the drive motor of the pump via a contact if a preset, non-adjustable limit value is reached. Because of the fixed limit value there is no control unit required with this design.

Special designs
In addition to the TSE control device, the ready-for-operation motor control contains all the components required for reliable operation. All that remains to be done during installation is to establish the connections for the power supply, electric motor and temperature sensor.

The dry running protection can optionally be delivered with a connection for a contact pressure gauge, to protect the connected pump from excessive pressure. For explosive areas the TSE can optionally be delivered in the ATEX or an intrinsically safe design. The TSE controller is approved by both UL and CSA for North American users.

TSE dry-running protection device in assembled state



1 **Temperature sensor**
2 **Connection head**
3 **Rotor**
4 **Stator**

Key advantagess
- Reliable protection against dry running
- Longer service life of pump
- Easy installation
- Compact and cost-effective design (TSE-LC)

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all things flow

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